



A semester-long soil mapping project for an undergraduate pedology course

David J. Brown

Washington State University, Pullman, WA, United States (dave.brown@wsu.edu)

Most students taking a pedology course will never work as soil mappers. But many will use soil maps at some point in their careers. At Montana State University, students spent 3 “lab” hours a week, complementing two lectures a week, in the field learning how to study soils literally from the ground up. The only prerequisites for enrollment were completion of an introductory soil science class and 3rd year standing at the university. The area to be mapped, just a km from campus, included a steep mountain backslope, and a complex footslope-toeslope area with diverse soils. Students were divided into teams of 3-4, with approximately 40 students altogether split over two sections that overlapped in the field by one hour. In the first lab session, groups completed a very basic description of just one soil profile. In subsequent weeks, they rotated through multiple pits excavated in a small area, and expanded their soil profile descriptions and interpretations. As students developed proficiency, they were assigned more dispersed locations to study, working for the most part independently as I hiked between pits.

Throughout this process, every pit was geolocated using a GPS unit, and every profile description was copied and retained in a designated class file. Student groups delineated map units using stereo air photography, then used these delineations to guide the selection of their final locations to describe. At the end of the course, groups used all of the combined and georeferenced profile descriptions to construct a soil map of the study area complete with map unit descriptions. Most students struggled to make sense of the substantial variability within their map units, but through this struggle—and their semester of field work—they gained an appreciation for the value and limitations of a soil map that could not be obtained from even the most entertaining lecture. Both the class and particularly the field sessions received consistently high student reviews during the four years I had students map soils at Montana State University.